

AMENDMENTS TO CLAIMS

1. (Currently Amended) A fuel gas injector for nitrogen oxide-reducing firing of regeneratively heated industrial furnaces comprising a gas supply pipe having a first diameter and a mouth of a second diameter, wherein the connection thereof forms a long diffuser with a free jet opening angle, characterised in that the ratio of the second diameter of the mouth and the first diameter of the gas supply pipe is smaller than three.

2.-10. (Canceled)

11. (Currently Amended) A fuel gas injector as set forth in claim 1 ~~characterised in that~~wherein a central nozzle pipe with a mouth forming a free jet opening angle is arranged within the gas supply pipe, forming an annular gap for guiding a partial gas flow between the gas supply pipe and the central nozzle pipe, in such a way that the notional prolongation of the generatrix of the central nozzle pipe mouth over the gap goes into the generatrix of the long diffuser.

12. (Currently Amended) A fuel gas injector as set forth in claim 11 ~~characterised in that~~wherein a closure and regulating device for partial gas flow adjustment is arranged ~~downstream-upstream~~ of the central nozzle pipe.

13. (Currently Amended) A fuel gas injector as set forth in claim 12 ~~characterised in that~~wherein the closure device comprises two separate valves which are arranged in an overall gas supply pipe and a secondary gas supply pipe which is branched therefrom and which directly charges the central nozzle pipe.

14. (Currently Amended) A fuel gas injector as set forth in claim 11 ~~characterised in that~~wherein the central nozzle pipe has an outer periphery and the gas supply pipe has an inside wall and wherein ~~the a~~ closure device ~~is~~ in the form of a cone ~~which~~ is axially displaceable on the outer periphery of the central nozzle pipe, said cone cooperating ~~and which co-operates~~ with a conical surface of the inside wall of the gas supply pipe.

15. (Currently Amended) A fuel gas injector as set forth in claim 12 ~~characterised in that~~wherein the central nozzle pipe has an inside diameter and wherein the closure device is arranged set back in opposite relationship to the flow direction~~spaced~~ from the mouth of the central nozzle pipe a distance of ~~by~~ more than five times the inside diameter of the central nozzle pipe.

16. (Currently Amended) A fuel gas injector as set forth in claim 14 ~~characterised in that~~wherein the central nozzle pipe has an inside diameter and wherein the closure device is arranged set back in opposite relationship to the flow direction~~spaced~~ from the mouth of the central nozzle pipe by a distance of more than five times the inside diameter of the central nozzle pipe.

17. (Currently Amended) A fuel gas injector as set forth in claim 1 ~~characterised in that~~wherein the mouth of the long diffuser is provided with a water-cooled ring at its outside periphery.

18. (Currently Amended) A fuel gas injector as set forth in claim 17 ~~characterised in that~~wherein the water-cooled ring is arranged separately.

19. (Currently Amended) A fuel gas injector as set forth in claim 17 ~~characterised wherein the gas injection has a longitudinal axis and in that~~ wherein the gas injection has a longitudinal axis and the water-cooled ring is rotatable about ~~the said~~ axis of the gas injector.

20. (Currently Amended) ~~A~~ An industrial furnace having a burner insert opening and a fuel gas injector having a longitudinal axis and as set forth in having a gas supply pipe of a first diameter and a mouth of a second diameter, wherein the connection thereof forms a long diffuser with a free jet opening angle and wherein the ratio of the second diameter of the mouth and the first diameter of the gas supply pipe is smaller than three and wherein the mouth of the long diffuser is provided with a water-cooled ring at its outside periphery one or more of the preceding claims characterised in that and wherein the long diffuser and the ring are arranged together in a said burner insert opening, said burner insert opening having a diameter that varies along its length

with its smallest diameter coincident with said water-cooled ring such that the enlarging in opposite relationship to the gas flow direction, in such a way that the
spacing between the water-cooled ring and the burner insert opening is at a minimum and ~~the said~~ axis of the gas injector is rotatable about the center point of the mouth.

21. (New) A fuel gas injector according to claim 1 wherein said free jet opening angle is approximately 20 degrees.

22. (New) A fuel gas injector according to claim 1 wherein a central nozzle pipe with a mouth forming a free jet opening angle is arranged within the gas supply pipe, wherein the free jet opening angle of the mouth is approximately equal to said free jet opening angle at the long diffuser.

23. (New) A fuel gas injector arrangement comprising a gas fuel injector according to claim 1 and an air supply wherein the air supply is arranged separately from the fuel gas injector.

24. (New) An industrial furnace having a burner insert opening comprising a gas injector arrangement having

a) a fuel gas injector arranged in the burner insert opening, said fuel gas injector having a gas supply pipe and a mouth, wherein the connection thereof forms a long diffuser with a free jet opening angle, wherein the ratio of the diameter of the mouth and the diameter of the gas supply pipe is smaller than three; and

b) an air supply wherein the air supply is arranged separately from the fuel gas injector.

25. (New) An industrial furnace of claim 24 wherein a distal end of said mouth aligns with a distal end of the burner insert opening.

26. (New) An industrial furnace having a burner insert opening according to claim 24, wherein the mouth of the long diffuser is provided with a water-cooled ring at its outside periphery and wherein the long diffuser and the ring are arranged together in the burner insert opening enlarging in opposite relationship to the gas flow direction, in

such a way that the spacing between the water-cooled ring and the burner insert opening is at a minimum and the axis of the gas injector is rotatable about the center point of the mouth.